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Abstract

Several studies were conducted in soybeans to evaluate commercially available herbicides for weed control, crop phytotoxicity, and crop yield. Various herbicide treatment combinations and application methods were evaluated.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Soybean Weed Management Studies

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Introduction

Several studies were conducted in soybeans to evaluate commercially available herbicides for weed control, crop phytotoxicity, and crop yield. Various herbicide treatment combinations and application methods were evaluated.

Materials and Methods

The studies were established using a randomized complete block design with three replications. Herbicide evaluation plot size was 10 ft by 25 ft. Herbicides were applied in 20 gallons of water/acre. Visual estimates of percentage weed control and crop injury data were made in June and July. Weed control observations are compared with an untreated control and made on a zero to 100 rating scale with zero percent equaling no weed control. Crop injury ratings are on a zero to 100 rating scale, with 0 representing no crop injury. Weed species and populations evaluated included 50 foxtail and three to ten waterhemp, lambsquarters, and velvetleaf/ft².

The soil was a Canisteo clay loam with a pH of 6.9 and 6.4% organic matter. The experimental design was a randomized complete block with three replications. The 2001 crop was corn. Tillage included fall chisel plowing and two spring field cultivations. 'Asgrow AG2201' glyphosate-tolerant soybeans were planted 1.75 inches deep on May 15 at 190,000 seeds/acre in 30-inch rows. Herbicide application dates and crops stages are presented in Table 1. Precipitation data are presented in Table 2.

Results and Discussion

(KS-glyph, Table 3) – There were no significant differences in control for the various treatments.

(KS-syst, Table 4) – The June 25th ratings are based on performance of the PRE/PPI treatments. Control from these treatments was variable and few significant differences were seen due to low rainfall amounts following planting. Fusion provided poorer foxtail control than many of the other treatments.

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Table 1. Herbicide application dates and crop stages.

Treatment	Date	Crop stage
Preemergence/Preplant Incorporated (PRE/PPI)	May 15	-
Postemergence (POST)	June 25	8"
Late Postemergence (LPOST)	July 2	12"

Table 2. Weekly rainfall totals and largest single rainfall following planting.

Weeks after planting	Total rainfall (inches)	Largest single rainfall event (inches)
1	0.00	0.00
2	0.42	0.32
3	1.02	0.88
4	0.66	0.66
5	0.19	0.17
6	0.39	0.25
7	0.00	0.00
8	0.00	0.00

Table 3. Evaluation of glyphosate systems in glyphosate-tolerant soybeans (KS-glyph).

Trt	Treatment	Rate	Unit	Grow	Foxtail Jul-12-02	Velvetleaf Jul-12-02	Lambsqt. Jul-12-02	Waterhemp Jul-12-02	Crop injury Jul-12-02
No.	Name			Stg					
1	Boundary	1.5	pt/a	pre	96 a	99 a	98 a	99 a	2 a
	Touchdown IQ	24	fl oz/a	post					
	AMS	3	lb/a	post					
2	First Rate	0.75	oz/a	pre	96 a	98 a	99 a	98 a	0 a
	Glyphomax Plus	24	fl oz/a	post					
	AMS	3	lb/a	post					
3	Pendimax	3	pt/a	ppi	99 a	99 a	99 a	99 a	0 a
	First Rate	0.3	oz/a	post					
	Glyphomax Plus	24	fl oz/a	post					
	AMS	3	lb/a	post					
4	Prowl	3	pt/a	ppi	99 a	99 a	99 a	99 a	0 a
	Extreme	3	pt/a	post					
	NIS	0.125	% v/v	post					
	AMS	3	lb/a	post					
5	Roundup Ultra Max	26	fl oz/a	post	99 a	99 a	99 a	99 a	3 a
	Amplify	0.3	oz/a	post					
	AMS	3	lb/a	post					
6	Roundup Ultra Max	26	fl oz/a	post	99 a	99 a	99 a	99 a	0 a
	AMS	3	lb/a	post					
7	Touchdown IQ	21	fl oz/a	post	99 a	99 a	98 a	98 a	0 a
	AMS	3	lb/a	post					
8	Glyphomax Plus	21	fl oz/a	post	99 a	99 a	99 a	99 a	1 a
	AMS	3	lb/a	post					
9	Roundup Ultra Max	24	fl oz/a	post	99 a	99 a	99 a	95 a	2 a
	AMS	3	lb/a	post					
	Roundup Ultra Max	20	fl oz/a	L-post					
	AMS	3	lb/a	L-post					
10	Untreated				0 b	0 b	0 b	0 b	0 a
LSD (P=.05)					1.7	1.3	1.8	3.0	3.8

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Table 4. Evaluation of conventional herbicide systems for weed control in soybeans (KS-syst).

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	Foxtail Jun-25-02 ^a	Velvetleaf Jun-25-02	Lambsqt. Jun-25-02	Waterhemp Jun-25-02	Foxtail Jul-23-02	Velvetleaf Jul-23-02	Lambsqt. Jul-23-02	Waterhemp Jul-23-02	Crop inj. Jul-23-02
1	Prowl	3	pt/a	ppi	90 a	85 ab	91 a	93 a	79 ab	92 ab	94 a	98 a	0 a
	Pursuit	4	fl oz/a	post									
	Ultra Blazer	1.5	pt/a	post									
	NIS	1	qt/a	post									
	28% UAN	2	qt/a	post									
2	Command Extra B	9.6	fl oz/a	pre	87 a	91 ab	96 a	98 a	98 a	73 b	98 a	99 a	0 a
	Command Extra G	25.6	fl oz/a	pre									
	Poast Plus	1.5	pt/a	post									
	COC	1	pt/a	post									
	28% UAN	2	qt/a	post									
3	Gauntlet	7.375	oz/a	post	90 a	95 a	99 a	99 a	97 a	96 a	99 a	98 a	0 a
	Poast Plus	1.5	pt/a	post									
	COC	1	pt/a	post									
	28% UAN	2	qt/a	post									
4	Authority	7.5	fl oz/a	pre	83 a	90 ab	98 a	94 a	85 ab	98 a	97 a	99 a	0 a
	Synchrony STS	0.5	oz/a	post									
	Assure II	8	fl oz/a	post									
	COC	1	% v/v	post									
	28% UAN	3	pt/a	post									
5	Boundary	1.5	pt/a	pre	53 a	48 b	62 a	60 a	67 b	77 ab	89 ab	90 a	0 a
	Flexstar	1.25	pt/a	post									
	Fusion	8	fl oz/a	post									
	COC	0.5	% v/v	post									
	28% UAN	2.5	% v/v	post									
6	Valor	3	oz/a	pre	83 a	88 ab	95 a	96 a	91 ab	55 c	62 c	67 b	0 a
	Select	8	fl oz/a	post									
	COC	2	pt/a	post									
	28% UAN	2	qt/a	post									
7	First Rate	0.3	oz/a	pre	81 a	91 ab	98 a	95 a	82 ab	95 a	95 a	98 a	0 a
	Flexstar	12	fl oz/a	post									
	Select	6	fl oz/a	post									
	28% UAN	2.5	% v/v	post									
	NIS	0.125	% v/v	post									
8	Ultra Blazer	1.5	pt/a	lpost	b				77 ab	90 ab	77 b	93 a	0 a
	Select	8	fl oz/a	lpost									
	COC	1	qt/a	lpost									
	AMS	2.5	lb/a	lpost									
9	untreated check				0 b	0 c	0 b	0 b	0 c	0 d	0 d	0 c	0 a
LSD (P=.05)					30.7	28.6	34.5	33.5	16.1	14.3	11.7	13.0	0.0

^a June 25th ratings are based on performance of the PRE/PPI treatments only. Postemergence treatments had not been applied.^b Missing data indicate treatments were not completed at that time and were not rated.

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).